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ORNITHOLOGICAL NOTES FROM DENMARK.

By P. G. Ralfe.

In spite of the universal lowness of its surface, Denmark is a land of much beauty and of strong contrast. In West Jutland the long undulations—wave following wave to the far horizon—make a wide landscape, mysterious as the sea. Sometimes they are checkered wtth unfenced fields, intersected by ribbons of white road, and sprinkled with groups of low farm-buildings, thatched and timbered, round which cluster a few small trees. Sometimes they are clothed with the primitive brown heath, varied by equally desolate "moser" and "kjœr,"* with their swamp-pools, or by the sombre brushwood of the new fir-plantations. The coast is a belt of yellow sand-hills ("klitter"), on whose harbourless shores beat the tempest-driven waters of the North Sea, and whose drifts ever threaten the dwindling crops that a thrifty peasantry tries to rear under their landward shelter.

But on the eastern side of Jutland, and in Fünen and Sealand, the land lies in wide sweeps of smiling pasture and cornland, with far-extending beech-woods of the tenderest green, with still, meadow-bordered streams and lakes, with narrow firths and straits whose waters gleam among the foliage, a succession of idyllic pictures, until the one great city of the kingdom is reached at its eastern extremity.

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* In Northern England "mosses" and "cars."

Denmark is also a country of great archæological interest, whose remains of past ages are innumerable, and whose history in ancient and modern times is full of romance. Here, too, the visitor is amidst a friendly people, who are the more ready to receive an Englishman as such. In my own experience the only hindrance has been the language, for, though all more highly educated Danes speak some English (and German), and many are very familiar with our tongue, yet in remote places, which a visitor interested in birds often reaches, he is apt to find himself at a loss with the farmer or boatman or country innkeeper. At the most interesting spots I had, fortunately, the company of Danish friends who spoke English well.

The avifauna of Denmark has great attraction for an Englishman, from the survival in its still extensive uncultivated lands of so many species—Avocet, Black-tailed Godwit, Black Tern, Ruff—which have ceased to nest in his own country. Until recently its forests also sheltered many interesting birds of prey—Sea-Eagle, Osprey, Kite, Buzzard, Goshawk, Peregrine Falcon*—but now these have been largely exterminated in the interests of game-preserving, and the many Raptores which in Denmark still fall to the gun of the keeper are mainly migrants from Scandinavia. In comparatively recent times the Cormorant, which here was a tree-builder, has ceased to breed. Of Continental species which seldom or never breed in England may also be observed in Denmark—the Icterine Warbler, Great Reed-Warbler, Marsh-Warbler, Eastern Nightingale, White and Blue-headed Wagtails, Little Owl, Wood-Sandpiper, Gull-billed Tern (the only colonies in North Europe), Red-necked Grebe, Little Gull (which here finds its western limit), and Turnstone, the last two, however, but sparingly.†

On the other hand, our mountain and rock-breeding birds are naturally, as residents, rare in or absent from Denmark. Such

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* The Peregrine, however, was not common. The Common Buzzard is still comparatively frequent. The Hobby also still breeds, and the Honey Buzzard very sparingly. The Marsh Harrier, once common, is now very scarce. For many of these details I am indebted to Hr. Winge's articles "Fortegnelse over Danmarks Fugle" in 'D. O. F. Tidsskrift,' 1906–07, and "Danmarks Pattedyr og Fugle" in 'Danmarks Natur.'

† It seems to be doubtful whether the Caspian Tern now nests.

BRITISH MUSEUM

are the Dipper, Ring-Ouzel, Grey Wagtail, Merlin, Curlew, and Common Sandpiper;* and though Denmark has an extensive coast-line, the Guillemot, Razorbill, and Kittiwake. Other Gulls content themselves with breeding-places in marshes and sand-hills, and on remote islets in lakes and firths; Terns and the smaller Plovers nest abundantly on the shores, and the species of breeding Ducks are numerous, and their individuals plentiful in favoured localities.

The following observations on birds in Denmark were made during three visits to that country, in the early summers of 1907, 1908, and 1909. They relate principally to West Jutland, but the writer also made some excursions in the neighbourhood of Copenhagen. Though quite superficial † they may, as for long not much on Denmark has appeared in 'The Zoologist,' be of sufficient interest for publication.

Esbjerg, the only Danish port of any importance on the North Sea, is well known as a landing-place on the way to Copenhagen by many British visitors, few of whom probably spend any time on it. The new town, of bright and not unpleasing appearance, stands above a low but rather steep brow, whose sandy slopes are partly planted with fir-trees, and on which the high water-tower is a conspicuous landmark, overlooking harbour and roadstead, and across the narrow strait the shores of Fanö (except the very small Manö, a little to the south), the only North Sea island now belonging to Denmark. Fanö, about ten miles long and two or three wide at the most, is not unlike the English island of Walney in position and character, but it has, opposite Esbjerg, a good-sized little town (Nordby), and near the south end a smaller village (Sönderho). On the west or North Sea side, overlooking a magnificent extent of the smoothest, most level sand, is the watering-place of Fanö Bad, with its pretentious hotels and villas. The greater part of the island consists of uncultivated sand-hills, much like those of the Lancashire coast. These "klitter," in some places planted with conifers, but usually covered with ling and dwarf willow, crowberry, and sea-reed, with rose-heather in the marshy hollows between, are bright in May with wild pansies and needle-furze, and cheered by the song of innumerable Sky-Larks. Here, on June 1st, 1908, I found a considerable colony of Herring-Gulls breeding. The nests were chiefly placed on a somewhat flat piece of ground out of sight of the sea, and surrounded by lumpy heights. Most were empty; some had one egg, and there were broken egg-shells strewn about. The nests had evidently been robbed systematically (the previous day had been Sunday), and a man who came upon the scene resented my presence among the birds. It appears that most of the ground on which the Gulls nest is Government "Plantage," and this was the overseer or one of his men, but he was appeased when he found that I was not taking eggs. I was struck by the subdued demeanour of the parent birds here, compared with the noisy excitement shown at our own rock-colonies. My friend Hr. Klinge tells me that the Danish Game Law allows Gulls' eggs to be taken until May 25th.

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* Of the first and the last two species a very few breed.

† Even in ornithology I was only on holiday in Denmark, and enjoyed, rather than investigated, its bird-life.

At the north-west corner of Fanö is a beautiful expanse of the whitest sand, without mixture of stones or vegetation, called on the Danish Ordnance Map (Generalstabenskaart)* "Sören Jessens Sande," but most of the north end of the island consists of a level sward, under the sand-hills, of considerable width, beyond which are gravel-like banks formed of comminuted shells, past which again the muddy tide-flats, which on the inner side of Fanö replace the hard sand of the open west, stretch far out toward the lonely sand-cliffs of Skalling, on the other side of the channel, low but steep, which are crowned by a white lighthouse, and assume fantastic shapes in the mirage of a hot afternoon. The sward ("Grönningen") and the adjacent banks and tide-flats are rich in bird-life. Lapwings, Oyster-catchers, Dunlins, Redshanks, and Ringed Plovers nest on the pasture, and on the flats outside are large numbers of all these species, in many cases perhaps migratory flocks and parties on their way further north. In 1908 I saw here also, on June 1st, some thirty Bar-tailed Godwits, some quite grey, some with the red nuptial plumage advanced. In various places on the north and west of Fanö, where the sward met the sand and became broken up among it into little islets of turf, I met with a few Kentish Plover, evidently breeding close at hand, but whether they had not yet laid, or whether from inexperience I failed in knowledge of the exact situation they preferred,* I was not able to locate a nest with eggs. I found many hollows apparently prepared, and the nests of Ringed Plovers and Oystercatchers on the neighbouring turf and gravel were easily found. A few Whimbrel were also seen on the west coast. Off Grönningen a few medium-sized Terns were evidently preparing to nest. (Hr. Klinge tells me that Little Terns, which I do not remember seeing here, also nest, and that the nests of the Kentish Plover, which are abundant, and at the time I was there should have contained strongly incubated eggs, are extremely difficult to find amid the small shells which surround them.)

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* Finely executed and very cheap maps, rather confusing in the extreme abundance of very delicate detail by which they depict the land surface.

There is a famous decoy on Fanö, on the eastern shore somewhat to the south, and a breeding colony of Black-headed Gulls, neither of which I have seen.

On the great bird colonies of the Ringkjobing Fjord volumes might be written. Picturesque descriptions of the locality are to be found in Seebohm's 'British Birds' under "Avocet" and "Black-tailed Godwit," and in the appendix on Denmark to Abel Chapman's 'Wild Norway,'† and the never-to-be-forgotten scenes of its bird-life, bewildering to eye and ear in their variety and profusion, are well depicted by these authors. My visits have been too hurried to permit of any but the most superficial observation. The lands on which the principal breeding-places are situated are State property, and strictly preserved by the Danish Ministry of Agriculture, a step rendered necessary, it is said, mainly by the depredations of English collectors and dealers in former years. Every lover of birds will rejoice at the protection now afforded, apparently with the best results, to so wonderful a preserve.

The Fjord and its surroundings have changed often and much, even within the period for which historical record is available.‡ From an arm of the sea it has become a fresh-water lagoon, about twenty miles in length, shut in from the North Sea by a narrow tongue of sand-hills, and emptying by a very narrow and partly artificial outlet (Nymindegab) at its south-west corner. Into its southern part projects a promontory, about three miles long and one broad, called Tipperne (The Tips).* This peninsula, little raised above the level of the Fjord, and itself almost a dead level, is clothed with verdure of the deepest green, almost without a flower (in May)† or a stone. In places it is bordered by muddy reed-beds, and intersected by channels of no great depth, while here and there on its surface are very shallow sheets of water. The Fjord itself is very shallow, never attaining twenty feet in depth. Much of it is not over knee-deep, and for long distances a cart can be driven through it. The depth, however, varies somewhat with the state of the Fjord's principal feeder, the Skjernaa, a sluggish stream, which, flowing in many channels, enters it from the east, and also with the condition of the outlet, which is liable to be choked by sand from the outer sea.

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* I was directed to the bird colonies on Fanö by Hr. M. Klinge, of Randers (formerly of Esbjerg).

† See also A. C. Chapman in 'Ibis,' 1894.

‡ For many topographical details about the Fjord I have consulted the

On a fine day in May the landscapes of the Fjord are charming in their lonely simplicity. The level tongue of Tipperne, freshly green, stretches far away amid shining waters, across which, on the east, the low mainland shores are backed by cultivated country, bare of trees, but sprinkled with small farms, where the high white churches of Stavning and Velling are conspicuous, and, far away to the north, the grouped houses of the little market town of Ringkjöbing, no longer a seaport for vessels of any size. To the west, all along the horizon, lies the serrated line of the dunes on Holmslands Klit, the sand-spit which parts the quiet broad from the North Sea. On Tipperne itself there is hardly a sign of human occupation, but one sub-

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interesting monograph of Dr. Rambusch, 'Studier over Ringkjöbing Fjord,' Copenhagen, 1900. A copy of this book was kindly sent me by my friend Hr. A. Hansen, of Randers.

* I believe this name applies strictly only to the four extremities of the peninsula, "Store Tip" and "Lille Tip."

† Hr. Mentz (in Rambusch) says that the dominant constituent of this green carpet is *Juncus Gerardi* (Harrilgræs), associated with *Agrostis alba* and *Festuca rubra*. In the late summer *Aster tripolium* flowers very profusely.

stantial wooden building near the north end is used by Government employées, especially in summer, when the peninsula is farmed for grazing. In winter multitudes of Swans, Geese, and Ducks frequent the place.

I visited Tipperne from Tarm on May 25th, 1909, having, through the good offices of the British Consulate, obtained a pass from the Ministry. I cycled to North Bork, on the east shore of the Fjord, with Hr. Hvass, of the Realskole at Tarm, and Hr. Brink, who has an exhaustive knowledge of the bird-life of the neighbourhood. At Bork we got a boat to ferry us over to the peninsula, and then made our way to its extreme point, wandering over the even grass-land, and sometimes wading through shallow channels which separated one "Pold" from another, or outlying islets from what was, comparatively speaking, mainland.

Over the grassy surface of Tipperne breed great numbers of Lapwings, Ruffs, Redshanks, and Dunlins, and not a few Black-tailed Godwits, the nests of all being on much the same kind of ground, but those of Ruffs, Redshanks, and Dunlins better concealed than the others. The nests of Ruffs and Godwits were naturally most interesting to me; those of the former, like Redshank's, hidden in the more luxuriant tufts of herbage, containing the four richly-marked eggs; while the four dull-coloured eggs of the Godwits lay very open, the parents, which at the nest are very wild and shy, flying high overhead, and uttering their wild screaming notes.

On one of the driest parts of the peninsula were a good many nests of Common Gull, usually with their complement of three eggs, while a large colony of Black-headed Gulls centred amid thick-growing water-plants, and other nests of the same species were placed on an islet some distance out in the shallows, easily reached by wading. Most of the nests of the Black-headed Gull had recently been robbed, this being allowed to a certain date, and they now frequently contained one egg only. On the islet was a Pintail's nest with eggs, and there also Terns (a medium-sized species, probably *macrura*) were just commencing to lay, while others had selected some little spots of dry ground in a pond amid the grass of the mainland. In 1908 a large colony of Sandwich Terns had bred on open ground close to and even just overlapping the chief settlement of the Black-headed Gulls. As usual with this species, they occupied a small area, where nests, or rather clutches of eggs, were closely crowded. But in 1909 we did not find them, and I was told that, like other Terns, they frequently shift the locality of their breeding-ground.

A still more interesting species was the Gull-billed Tern, large numbers of which, together with Avocets, occupied a remote part of the open grass-land, the nests of the two species being mixed all over the surface. At this time the nests of the Tern had usually three eggs, those of the Avocet four. The curious laughing cry of the large Gull-billed Tern, whose tail is but slightly forked, is very characteristic, and so are its eggs, which approximate somewhat in appearance to those of a Gull, being more elongated in shape and more uniform in form and colour than those of the Common and Arctic Tern. Mr. Chapman does not seem to have met with either this species or the Sandwich Tern here in 1893, though he saw the latter and another large Tern, which he failed to identify, on the outer sand-dunes. Dr. Rambusch remarks that while the Sandwich Tern, in accordance with its habits elsewhere, seeks its food on the North Sea coast behind the Klit, *S. anglica* goes eastward and inland, following the plough on the cultivated lands, like a Gull. The nests of both Gull-billed Terns and Avocets were of a very artless character, but other nests of the Avocet, on an artificial strip* projecting into the Fjord, were much more substantial structures. These curious and beautiful birds, so strangely attenuated in form, with their pure black and white plumage, shrill cry, and singular method of using their singularly-shaped bills, were abundant on Tipperne, guarding their nests on the grass, or wading with their long blue legs in the sunlit water of the channels.

On the great shallow of Stavning Grund, about half a mile from the middle of the eastern shore of the Fjord, the isolated Klægbanken, about two miles long by a few hundred yards in width, lies parallel with the mainland, from which, when the level of the water is low, it can be waded to. Klægbanken is clothed with dense aquatic vegetation (especially *Phragmites communis, Scirpus Tabernæmontani*). On its east side there is deep mud; on the west the ground is of a more sandy character, so that it is easy to walk along the shallow outside the vegetation.

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* Such narrow dykes are constructed of sods for the purpose of reclaiming the space between them, as has been done on Tipperne to a considerable extent.

On May 26th, 1909, I visited Klægbanken with Hr. Hvass, of Tarm. From Tarm we went by train to Lem (passing Deibjærg, famous for the discoveries of prehistoric waggons in 1881 and 1883), and cycled thence to Halby, on the shore of the lagoon opposite the bank. As far as Venner there was a fairly good road, but the last mile or two from Venner to Halby was extremely bad. When coming back we loitered too long at Halby, enjoying the kindly hospitality of the ferryman, who showed us a shorter track by which to return to Lem. At first we rode easily on hard field paths, but darkness overtook us among the ruts and sand-drifts of a terrible bye-road. My friend seemed accustomed to this kind of going, but for considerable distances I was quite unable to ride, and finally we arrived at Lem too late for the last train to Tarm. We found comfortable quarters for the night in the inn at Lem.

Though of less extent than Tipperne, Klægbanken is an even more singular place. So low that from the mainland bank it is scarcely noticeable, the green line grows upon the eye as you are punted over the channel, until you land upon the tussocks which rise from the mud, and are saluted by the screeching chorus of the thousands of Black-headed Gulls which are the feature of the islet, and whose nests are scattered or crowded almost all over its surface. Klægbanken is also very rich in breeding Ducks, Mallards, Shovelers, and Pintails, and Coots are numerous. As we blundered through the boggy reed-beds every few minutes we roused a Duck from its warmly-lined nest and full clutch of eggs. A patch of reeds had recently been burnt, and amid the blackened space was a nestful of Mallard's eggs scorched and cracked by the flames. Mallards seemed to me the most numerous of the Ducks, but their nests were less concealed than those of the Shovelers, which certainly were also abundant. A nestful of small Duck's eggs perhaps belonged to a Garganey.

At the north end were many Sandwich Terns, which, however, did not yet seem to be laying. I had not time to examine a large colony of the Great Crested Grebe, which I was told existed at the southern extremity. The most interesting of the inhabitants of Klægbanken are the Little Gulls, a small colony which has for some years nested here. Vegetation, according to Dr. Rambusch, began to clothe the bank in 1880; in 1905 the Little Gull was discovered breeding by Hr. R. Christensen, who announced the find in the 'Transactions' of the Naturhistorisk Forening of Copenhagen (1905, pp. 245–249). In its nest and eggs, as in its appearance and habits, the Little Gull is a miniature of the Black-headed, but the nests of the Little Gull here were on ground more open, at least in May, than what the Black-headed usually occupies, being flat, and covered only with a thin growth of rushes. It is to be hoped that the protection here afforded to this charming little species may lead to a further extension of its breeding-range in North-western Europe.

Some Gull-billed Terns breed on the more open part of Klægbanken, and we saw some pairs of nesting Redshanks, more than might have been expected from the nature of the ground; one nest with eggs was placed deep among the tall reeds. On the mud-flats were some immature Herring-Gulls, and a little flock of Sanderlings in changing plumage. Klægbanken is said to be entirely submerged in winter, and even in summer the extent above water varies very considerably. The mud in the shallows around it is full of large bowl-like hollows, which Dr. Rambusch says are caused by the wallowing of the Wild Swans, which, with Geese, Ducks, and waders, frequent the place in winter in immense numbers.

Both on Tipperne and Klægbanken I saw a few Common Sandpipers on migration.

The Skjernaa, as above mentioned, forms a delta, from the point where, between the twin villages of Tarm and Skjern, it is crossed by road and railway down to its outlet into the Fjord. This is a wide level tract of marshy meadow, its many water-channels bright, as they would be in England, with marsh-marigold and cuckoo-flower. It is also rich in bird-life. Godwits, Lapwings, Dunlins, Redshanks, and Ruffs nest on the flat expanse in considerable numbers.* There are also small colonies of Black Tern. When in Skjernaadal on May 24th I was too early to see their nests, but by the end of the first week in June, as Hr. Brink informed me, eggs had been laid. The nests are usually in very wet places, difficult of access. The Great Snipe used to nest here also, but I do not know whether it still continues to do so.

In a marshy hollow with thickets of willow, which the Bork road crosses near Tarm, Hr. Brink pointed out a pair of the Wood Sandpiper. This species nests not uncommonly in such spots in this neighbourhood, and my friend told of a curious mishap which lately occurred to a hatching bird. A boy in jumping over the little stream landed right in the nest, killing the Sandpiper, and breaking all the eggs but one, which was brought to Hr. Brink, who kindly gave it to me. Hrr. Klinge and Hansen say that the species nests in nearly all the mosses from Ribe to Tarm.

From Copenhagen a very interesting excursion may be made to the island of Saltholm, about four miles long by one broad, and at its nearest point some five miles from the city. Saltholm lies in the Sound outside Amager, over which can be seen from it the spires and domes of Copenhagen, while on the other side are visible the smoky factory chimneys of Malmö, on the Swedish coast. Saltholm is very low, only indicated from the Amager shore by its houses and scanty trees. In winter it is liable to submergence, but, unlike Tipperne and Klægbanken, it has a floor of solid chalk, which sometimes comes to the surface, and was formerly quarried. There are on the island two sets of farm-buildings, one of them large and prosperous-looking, and it is used by the people of Amager as a summer pasture for cattle and horses. Most of it is covered with short, rich grass, which becomes longer and coarser toward the south end, where it is much broken by muddy pools and gullies, and ends at length in an extraordinary labyrinth of stony islets extending far out into the Sound, called Svaneklapperne. When first, in 1907, I visited Copenhagen, I had some trouble in finding out how to reach Saltholm, but was at last directed to Kastrup, the village on Amager opposite to the islet. I went there on the morning of June 5th, and fortunately fell in with two residents of Kastrup who spoke English, Hrr. Nörregaard and Larsen, who kindly offered to accompany me, and arranged the hiring of a small sailing-boat. We landed on a quay near the north end of Saltholm; on most parts of the shore the shallowness of the water makes access difficult. At the large farm near the landing we got a rude cart, in which we were driven to the southern extremity, bumping over knolls, and plunging into muddy channels. Then we wandered far out into a wilderness of water, boulders, and grass, with myriads of shrieking "Hættemaager" overhead, amid which hovered the graceful forms of the lighter Terns (*S. hirundo*), which share with them this nesting-ground. On the higher knolls, covered with grass, wormwood, and sea-lavender, were placed the nests of the Gulls, whose eggs at that time were just hatching. As we left each green skerry, another and yet another showed in front, each with its cloud of hovering Gulls, and we were still far from the extremity when the advance of time forced us to return to shore. On the rough grass-land were many nests of Common Gulls with eggs, scattered rather widely over the ground. I saw some Herring-Gulls overhead, and though I found no nests, I find from the account in the 'D. O. F. Tidsskrift' that a few of this species breed on Saltholm. A few Sheld-drakes were visible, and many Oyster-catchers, nesting on marshy ground and amid the shallow pools. Ducks* flew to and fro, but I had no time to *search* for nests, and did not on this occasion stumble on any; I believe I did not reach their principal breeding-ground. Dunlins, Lapwings, and Redshanks were abundant over the pastures, and we saw several small parties of Ruffs, mostly seeming to have the "ruff" dark. There were Ringed Plovers near the north end of the island, where there are sandy pools, and near here I saw also one Turnstone. I learned afterwards that the latter species, which breeds in but few Danish localities (little outlying islets), is found nesting here in very small numbers.

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* Here Seebohm and Chapman found the Black-tailed Godwit breeding, as described in 'British Birds,' iii. p. 164, and 'Wild Norway,' p. 307, &c.

On Saltholm, again, as on all the open lands of Denmark, were Sky-Larks in profusion ; the air was filled with their never-ceasing song, amidst the trilling of Dunlins, the squeaking of Lapwings, the fluting of Redshanks, and the croaking and screeching of the Common and Black-headed Gulls.

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* The Pintail, Mallard, Shoveler, Teal, and Garganey nest on Saltholm; also the Eider in small numbers (I did not see any), and the Red-breasted Merganser (of which I saw a handsome drake).

In spite of the inundations to which the island is liable, there are large numbers of Hares on it. Some low mounds have been raised as places of refuge for them, but the author of 'Danmarks Land' says that on New Year's night, 1902, when Saltholm was completely submerged, four hundred were drowned, others taking to the buildings and even the trees in the little plantation.

The birds on Svaneklapperne are protected by a society for bird protection, "Svalen," but it is said that on the main island there is no adequate provision for their safety.

On June 11th, 1908, I made, with Hrr. Schioler, Christiani, and Landmark, a visit to a locality of a very different nature—that fine royal domain, the Dyrchave, to the north of the city. Here, in a high tree, Hr. Christiani showed us the nest of *Corvus corax*, which now is a very rare breeder in Denmark. Both the parent birds were still at the spot, and flew about with the fierce croaking so familiar at home ; the site recalled the ancient conditions of the nesting of the Raven in England. From the nature of the Danish country, its formerly numerous breeding-places there must have been principally in trees, but one is said to have existed on the curious isolated crag Skarreklit, on the north-west coast of Jutland. In another tree was a nest of the Honey Buzzard, which had probably been robbed ; the bark bore marks of climbing-irons, and the tenants were not to be seen. We had the pleasure of seeing and hearing a male of the little Red-breasted Flycatcher, which Hr. Christiani had already observed on a number of occasions, and which probably nested, though no nest was found. The species is very scarce in Denmark. We heard also Ring-Doves and Stock-Doves, and saw a number of Hooded Crows, the native crow of Denmark, which is found in all woods. In the hollow trees of the ancient forest nest, besides Stock-Doves, Jackdaws, Starlings, and Pied Flycatchers.

The low shores of Amager are a famous locality for migrating shore-birds ; I was not there at a favourable season for observing these, but noticed numbers of Oystercatchers, Redshanks, and

Sheld-drakes. In the neighbourhood of Amager Fælled, on dry, hard, stony waste just beyond the last buildings of the city, Hr. Christiani pointed out to me the three species of Ringed Plover—Common, Little, and Kentish—all breeding on the same ground. It would appear that birds must be comparatively unmolested by the Danish boy, or the nesting of these Plovers in numbers in such a locality, or that of the Ringed Plover and Little Tern on the much-frequented beach near Esbjerg, could scarcely continue. In an interesting article, illustrated from photographs, in the Danish Ornithologists' Union's journal, Hr. R. Christensen has described the nesting of the three species of Plover on somewhat similar ground at Frederiksholm Tileworks, on the opposite side of Kalvebodstrand from Amager Fælled.

With Hr. S. Saxtorph, of Hillerød, I visited the beautiful Lyngby Skov, in North Sealand, near Arresö, the largest Danish inland lake. This wood contains, in lofty oak-trees, a considerable heronry, of which Hr. Saxtorph has for years made a study; also a rookery, not just so common a thing in Denmark as in England.

Söborg Mose, near Copenhagen, though suburban villas are gathering around it, is still a breeding-place of many marsh-birds. A few Black Terns still nest there; there is a colony of Black-headed Gulls, and Hr. N. Christiansen, in his list of breeding species, includes the Red-necked Grebe and four species of Duck; also the Great Reed-Warbler.

Looking from the high-road, which passes close to the end of the moss, a casual eye would note only, among the cultivated fields and scattered houses, a narrow hollow with dense vegetation deeply green. But on approaching the edge a close growth of strong aquatic plants is seen to rise from water some four feet deep, and from thick mud below, forming a most impenetrable cover.

The place is now strictly preserved by the owners of the shooting rights, but in 1907 I made a voyage in a punt down the broad central channel which drains the marsh. My boatman was unwilling to leave this and push his boat into the tangle of surrounding reed and sedge, so that I saw little of the bird-life of the place; only the Reed-Buntings, Whinchats, and Yellow

Wagtails which frequented its margins; a flight of a Duck now and then to or from the cover; the many Reed-Warblers along the channels, a chance Snipe rising from my feet on a grassy knoll, a distant flock of Black-headed Gulls, and a few Black Terns passing Swallow-like on the wing. We reached neither the colony of Gulls nor that of Terns, which in the case of the latter was a considerable disappointment.

Of Danish small birds, I have not much to say. Most of the species familiar in the British lowlands are to be met with somewhat as at home. Chaffinches dominated in Dyrehaven, and, with other English birds of wood and garden—Finches, Warblers, and Thrushes—were abundant in such places as Christianslund at Nyborg, and the beautiful belt of woodland which covers the old fortification surrounding the pleasant town of Fredericia. I heard the Wood-Warbler in Lyngby Skov and in Kongelund; in Dyrehaven we failed to hear it on June 11th, probably on account of the late date, for Hr. Schioler tells me it is common there. The Nightingale (the Eastern species) is found in many places about Copenhagen. Tree-Sparrows I saw in several localities, including the suburbs of Copenhagen. Reed-Warblers were abundant in suitable spots, as Tipperne, Klægbanken, and Söborg, and Reed-Buntings frequent along the pools and ditches. I saw a few Goldfinches; the species is more common in Denmark than in Britain. Everywhere on the open lands of West Jutland and elsewhere the Sky-Lark, as already mentioned, was abundant; in West Jutland the Corn-Bunting was also a conspicuous bird.

The White Wagtail and the Blue-headed Wagtail were two species of special interest to an Englishman as Continental forms of familiar insular birds; the latter was especially frequent on the damp meadow-lands of West Jutland, and on the levels of Amager with the Whinchat, another common Danish bird. Everywhere along the coast I met with a few Wheatears, but never with a Stonechat (the latter is very uncommon in Denmark).

Common in every part of Denmark, and forcing itself on the attention of the most careless, is the Icterine Warbler, with its loud, cheerful, squeaking song and restless movements, frequenting the trees by the roadside and the shrubs in the gardens of villas and cottages. Here and there I saw Red-backed Shrikes; there was one in the little isolated plantation on Saltholm. Swifts and House-Martins inhabit the towns.

The Stork is a familiar and favourite bird in Denmark; I once saw from the train a considerable flock in a meadow, and observed the great nests in various places on farm-buildings and houses in villages, principally in Jutland. Besides the abovementioned colony of Herons, single birds were seen occasionally along streams and firths.

The only Golden Plover I have seen in Denmark was in full nuptial plumage in a field on Amager on June 5th, 1909; the species breeds sparingly on the heaths.

The following is a list of species observed by me in Denmark, with their Danish names. It is probably somewhat incomplete, as, having no intention of publishing, I did not always at the time make a note of the commoner birds observed, and now find no record, for instance, of *Accipiter nisus*, *Regulus cristatus*, some of the commoner Tits, and *Gallinula chloropus*, which must almost certainly have been seen :—

Turdus musicus (Song-Thrush) (nest). Sangdrossel.
T. merula (Blackbird). Solsort.
Saxicola œnanthe (Wheatear) (nest, eggs). Stenpikker.
Pratincola rubetra (Whinchat) (nest, eggs). Bynkefugl.
Erithacus rubecula (Redbreast). Rodkjælk.
Daulias philomela (Eastern Nightingale). Nattergal.
Sylvia cinerea (Whitethroat). Tornsanger.
S. hortensis (Garden-Warbler). Havesanger.
Phylloscopus trochilus (Willow-Warbler). Lovsanger.
P. sibilatrix (Wood-Warbler). Grön Lovsanger.
Hypolais icterina (Icterine Warbler). Gulbug.
Acrocephalus streperus (Reed-Warbler). Rörsanger.
A. palustris (Marsh-Warbler). Kjærsanger.
A. phragmitis (Sedge-Warbler). Sivsanger.
Accentor modularis (Hedge-Sparrow). Jernspurv.
Parus major (Great Titmouse). Musvit.
P. cæruleus (Blue Titmouse). Blaamejse.
Troglodytes parvulus (Wren). Gjerdesmutte.
Motacilla alba (White Wagtail). Hvid Vipstjert.
M. flava (Blue-headed Yellow Wagtail) (nest, eggs). Gul Vipstjert.

Anthus pratensis (Meadow-Pipit). Engpiber.
A. trivialis (Tree-Pipit). Skovpiber.
Lanius collurio (Red-backed Shrike). Tornskade.
Muscicapa grisola (Spotted Flycatcher). Graa Fluesnapper.
M. atricapilla (Pied Flycatcher) (nest). Broget Fluesnapper.
M. parva (Red-breasted Flycatcher). Lille Fluesnapper.
Hirundo rustica (Swallow). Forstuesvale.
Chelidon urbica (Martin). Bysvale.
Cotile riparia (Sand-Martin). Digesvale.
Carduelis elegans (Goldfinch). Stillits.
Ligurinus chloris (Greenfinch). Svenske.
Passer domesticus (House-Sparrow) (nest). Spurv.
P. montanus (Tree-Sparrow). Skovspurv.
Fringilla cœlebs (Chaffinch). Bogfinke.
Linota cannabina (Linnet) (nest, eggs, young). Irisk.
Emberiza miliaria (Corn-Bunting). Bomlærke, Kornværling.
E. citrinella (Yellowhammer). Gulspurv.
E. schœniclus (Reed-Bunting). Rörspurv.
Sturnus vulgaris (Starling). Stær.
Pica rustica (Magpie). Skade.
Corvus monedula (Jackdaw). Allike.
C. cornix (Hooded Crow) (nest). Krage.
C. frugilegus (Rook) (nest, young). Raage.
C. corax (Raven) (nest). Ravn.
Alauda arvensis (Sky-Lark) (nest, eggs). Lærke.
A. cristata (Crested Lark). Toplærke.
Cypselus apus (Swift). Mursvale.
Iÿnx torquilla (Wryneck). Vendehals.
Cuculus canorus (Cuckoo). Gjög.
Pernis apivorus (Honey Buzzard) (nest). Hvepsevaage.
Tinnunculus alaudarius (Kestrel). Taarnfalk.
Ardea cinerea (Heron) (nest). Hejre.
Ciconia alba (White Stork) (nest). Stork.
Tadorna cornuta (Common Sheld-drake). Gravand.
Dafila acuta (Pintail) (nest, eggs, young). Spidsand.
Anas boscas (Wild Duck) (nest, eggs). Stokand.
Querquedula circia (Garganey) (nest, eggs). Atling.
Q. crecca (Common Teal). Krikand.
Spatula clypeata (Shoveler) (nest, eggs, young). Skeand.
Mergus serrator (Red-breasted Merganser). Toppet Skallesluger.
Columba palumbus (Ring-Dove). Ringdue.

C. œnas (Stock-Dove). Huldue.
Phasianus colchicus (Pheasant). Fasan.
Perdix cinerea (Partridge). Agerhöne.
Crex pratensis (Corn-Crake). Engsnarre.
Fulica atra (Coot) (nest, eggs). Blishöne.
Charadrius pluvialis (Golden Plover). Hjejle.
Ægialitis cantiana (Kentish Plover). Hvidbrystet Præstekrave.
Æ. euronica (Little Ringed Plover). Lille Præstekrave.
Æ. hiaticula (Ringed Plover) (nest, eggs, young). Præstekrave.
Vanellus vulgaris (Lapwing) (nest, eggs, young). Vibe.
Strepsilas interpres (Turnstone). Stenvender.
Hæmatopus ostralegus (Oystercatcher) (nest, eggs, young). Strandskade.
Recurvirostra avocetta (Avocet) (nest, eggs, young). Klyde.
Gallinago cœlestis (Common Snipe). Horsegjög, Bekassine.
Tringa alpina (Dunlin) (nest, eggs). Ryle.
Machetes pugnax (Ruff) (nest, eggs). Brushane, Skoggerkok.
Calidris arenaria (Sanderling). Selning.
Tringoïdes hypoleucus (Common Sandpiper). Mudderklire.
Totanus glareola (Wood-Sandpiper). Tinksmed.
T. calidris (Redshank) (nest, eggs). Rödben.
Limosa lapponica (Bar-tailed Godwit). Kobbersneppe.
L. ægocephala (Black-tailed Godwit) (nest, eggs, young). Stor Kobbersneppe, Rödvitte.
Numenius phæopus (Whimbrel). Lille Regnspove.
N. arquata (Curlew). Storspove.
Sterna macrura (Arctic Tern) (nest, eggs). Havterne, Kystterne.
S. fluviatilis (Common Tern) (nest, eggs). Terne, Hætteterne.
S. minuta (Little Tern) (nest, eggs). Dvergterne.
S. anglica (Gull-billed Tern) (nest, eggs). Sandterne.
S. cantiaca (Sandwich Tern) (nest, eggs). Splitterne.
Hydrochelidon nigra (Black Tern). Moseterne.
Larus argentatus (Herring-Gull) (nest, eggs). Havmaage, Stormaage.
L. canus (Common Gull) (nest, eggs). Stormmaage.
L. ridibundus (Black-headed Gull) (nest, eggs, young). Hættemaage.
L. minutus (Little Gull) (nest, eggs). Dvergmaage.
Podicipes cristatus (Great Crested Grebe) (nest). Stor Lappedykker.

In conclusion, I have to acknowledge the kind assistance of Hrr. A. Christiani, of Copenhagen, and M. Klinge and A. Hansen, of Randers, who have looked over my manuscript, and made various suggestions and corrections.

SUMMER IN LLEYN, WITH SOME OTHER NOTES ON THE BIRDS OF THE DISTRICT.

By O. V. Aplin, F.L.S.

(Concluded from p. 50.)

The shores of Lleyn west of Llanbedrog, the muddy harbour of Pwllheli and the long stretches of beach on either side of it left behind, do not afford much breeding-ground for shore birds, though a few Lesser Terns, Ringed Plovers, and Oystercatchers may be seen in Abersoch and Aberdaron Bays and in Hell's Mouth; the Oystercatchers, however, are more fond in summer of the stacks and islands, on all of which I noticed them. Aberdaron Bay has a sand and pebble beach of no great width, but it is broken into by the village, and boasts only of a few pairs of Ringed Plovers and Oystercatchers; the former have nested there, but I never knew the eggs of the latter actually found on the beach. That wide open bay called Hell's Mouth at first looks promising; but though at the eastern end under the base of Pen Cilan the beach is wide, and there is a good stretch of shingle, towards the west the shore narrows and the beach beneath those low, torn and battered earthy cliffs which is safe from the sea must be of small extent up to the end of the bay, where the rocks of Craig du cut off the low shores, and the empurpled heights of Rhiw spring so boldly in great steps above the rocks and woods of this corner of the wide bay, and make it the most beautiful spot on the coast of Lleyn. They are a glorious sight, even on a grey rainy day, with changing lights, when the heather, patched as it is with wide stretches of rich green fern, looms out a fine deep purple, and the slopes are brightened high up with a few sun-burnt pastures or a tiny barley patch already yellowing, and one or two brilliant white farmhouses. There was a flock of a dozen old and young Ringed Plovers here; and a pair which were very anxious, evidently about some small young ones. Throwing themselves about in an altogether abandoned manner, lying down on their sides with one wing flapping weakly in the air and its feathers blown up by the wind, broken surely! The birds in fact were acting the badly wounded bird to perfection. Often as we may have seen the performance, who can help pausing to look at it again, wondering at this plain indication of thinking, or exhibition of thoughtful intelligence! When a clutch of eggs is the treasure it is enough to steal away quietly and unseen if possible. But when there are downy young to be considered the case is desperate; the man *must* be got away somehow. So this must run in the Plovers' broad bullet heads. Let us pretend we are broken-winged and helpless, so that he will think he has only to make a quick run forward to secure one of us (we *know* he would like to get hold of us). Struggle on a bit, lamely, and then tumble down again. He is following. If he makes two or three more rushes he will be led away a good distance. Now we have got him to a safe distance; no need to do more. So we will now go back, "pee-ep." And with their quick glancing flight they fly round us, and are again running over the pebbles not far from where we first caught sight of them. Surely there is reasoning power and thinking intelligence here? While sitting weather-bound under the stern of the 'Idea' of Carnarvon, thrown far up on this dangerous shore last winter, listening to the heavy roar of the tide flowing in over the quicksands, I saw three old Lesser Terns and half a dozen Oystercatchers. At the end of summer, at all events, food for little waders is very abundant on the sands. On hot sunny mornings near the tide edge Sand-hoppers swarm, especially near Aberdaron; as you walk along they jump up literally in thick clouds. There were a few little waders there sometimes. Ringed Plovers, young and old, a Sanderling, and a Dunlin or two, and also some Common Sandpipers, both there and at other places, rocky and sandy. At night I used to hear all these and also Golden Plover and Curlew. The last-named, like Peewits, were to be seen feeding on the grassy cliff tops and in the fields among the sheep.

Shearwaters, at this time of year at all events, when the Mackerel are in, are to be seen abroad until well on into the forenoon. A boatman told me on the 27th that numbers of "Mackerel Cocks" were round his boat early in the morning; and the next day, about 8.30 a.m.—a calm, hot morning—some little way off shore where the Mackerel-boats were, I saw numbers passing up and down in parties of about a dozen. They kept a straight course for some distance, flying just over the surface. Now all flapped their wings together a few times, then all skimmed again. Presently all the little groups gathered in one place where they were very busy flying up and down and settling on the sea and rising again; they made a long black line on the sea and there must have been great numbers of them. I got a downy young one out of a hole. A most lovely little thing; the grey down which covers most of the bird—an inch and a quarter long on the back—is of a beautiful silky texture and of a darkish pearl-grey with almost a blue-grey tinge. The arrangement of the white on the under parts is very pretty. It is more than twenty years since my old friend the late Rev. H. A. Macpherson called my attention to it. Writing on board the s.s. 'Claymore' on his way from spending a week on Eigg, he sent me a sketch of a downy young one lying belly upwards. But as the young bird seems to be little known even now, I will complete the description of it here. The white starts at the chin, is continued down the neck and breast in a broad band to the upper part of the belly, here it divides, and, enclosing a patch of grey, joins again at the end of the body. Beak lead colour. Legs marked almost as in the old bird, but the colours less distinct. The little fellow uttered a lively "chirp" with a piping sound about it.

Almost all the Guillemots and Razorbills had left the cliff on St. Tudwal's with what young ones they managed to rear despite the Herring-Gulls, which rob them heavily. There were a good many on the sea between the islands. Of the few Guillemots left on the cliff only one or two had young that we could see (they are taken off when quite small). We also saw three eggs. The few that breed on Ynys Gwylan fawr had left the rocks, and were scattered over the sea a little way off; but there must have been some late breeding birds on the ledges at Pen Cilan, for when walking along the top I could hear the loud "arrrr" come up sometimes. The Shag is now *the* bird of the rocky points jutting far out. Some Cormorants and Shags flew out of the big cave on St. Tudwal's as we passed in the boat, but I did not see any late Shags' nests. Some years ago I mentioned seeing a pair of Red Grouse on the Rivals, and it turns out that these mountains have long been known to harbour the Iar Mynydd. Writing of Trer Caeri and the Rivals, Pennant says ('Tours,' 1773-6), "The space on the top is an irregular area; part is steep, part flat: in most parts covered with heath, giving shelter to a few Red Grouse." The Grouse on Rhiw, if any remain, are said to be found about the north or north-east end towards Sarn; at the other end the bell-heather and dwarf gorse are so thick and close you can almost walk on the top of them in places—too thick for cover; there is little ling.

Apart from the late-breeding sea-birds, the end of July is a bad season for the ornithologist; but a little time then may be spent profitably in confirming one's impressions gained in spring of the status of the ordinary small birds. I found nothing new in that way. I saw the Red-backed Shrike again near Mynydd Mawr. Rock Pipits were very numerous on the islands. Stonechats were numerous, and I noticed some on the bleak open table top of Rhiw. The Grey Wagtail haunted its old breeding-place in Porth Saint. The Nightjar ("Troell," the spinning-wheel) bred on Rhiw this year, and I heard two "turring" at Abersoch. A Starling seemed to be breeding late, for I saw it go down the chimney of the deserted building on St. Tudwal's island on the 24th. I was more than ever struck with the extraordinary abundance of the Blackbird, even at the far end of Lleyn, about Aberdaron. Walking from there to Careg (where woodland birds become more abundant) we passed on the roadside a long heap of very rotten farmyard manure, and flushed from it from a dozen to fifteen Blackbirds. They had scratched it down on to the road, just as if a score of strong yard hens had been at work. It was not an uncommon thing to come upon birds of the year skulking in ditches and little gullies and so tame that they merely shuffled their wings and cried "tuck, tuck" when you were close to them. House-Martins were local and rather scarce, but Swallows were in average numbers. They breed about almost any farm or deserted building. Down on the north shore is a little sandy cove called Porth Oer, with Maen Mellt, a light-coloured rock as its name denotes, lying a bit off shore. A lonely spot, and not less lonely looking for a half-ruined shed with high-walled prison-like yard, built years ago to store boat-borne coal in when mining was tried here. A pair of Swallows had found this out, and had a nest with half-fledged young, and what appeared to be the first brood flying about. Maen Mellt appeared to be sometimes wave-washed and useless for birds. In the dreary-looking low earth cliffs of Hell's Mouth, torn and rent by the fierce winter storms, are some bands of sand. Here some Sand-Martins were breeding; the big fledged young hurriedly retreated from the mouth of a burrow when I looked in. The holes were deep. When sitting to enjoy the remarkable view to be had from the Cromlech at Cefn Amlwch (well figured by Cliffe in 'The Book of North Wales,' 1851), I saw a number of Wood-Pigeons coming out of a wood on the hillside and going into the barley and oats near. The view from the beautifully placed Cromlech is one of the best in this part of Wales, and includes Holyhead with the South Stack, the best view of the Rivals (all three heads), and the Bird-Rock backed by them; on the other side is Snowdon, and, further round, the Merioneth mountains. Carn Madryn, a fine isolated hump, lies just in front. The Peregrine reared young at two nesting-places near Aberdaron this year, and, as usual, nested on Pen Cilan, about one hundred feet above the sea and sixty feet from the top. The Barn Owl bred in a hole in a quarry close to Aberdaron, so far in that the eggs could not be reached with a stick, but Moles and Rats were raked out. On my way home I saw from the train on the Afon Wen meres Coots, Dabchick, Moorhen, four or five Teal and Redshanks. I have not been able to find out whether the last-named breed there or not. I heard one night at Abersoch what I am pretty sure was the hooting of a Tawny Owl.

I could not get to Bardsey myself this year. The big cliff looked as if it had been burnt brown by the fine weather. But Mr. T. A. Coward, who was on the island from June 14th to 16th, most kindly handed over his notes to me, with permission to make use of them. Mr. Coward saw six birds there which I did not, *viz.* the Stonechat, Swift, Redshank, Lesser Black-backed Gull, Black-headed Gull, and Puffin. I had remarked with surprise the absence of the Stonechat when I was on the island. Mr. Coward saw a male in an excited state, and he felt sure that there was a female and nest somewhere near. It is common on the mainland. There were many Swifts about, but the nesting-place (if any) was not found. They wheeled round the mountain and high above the fields, but were not heard screaming round the farms. Many Puffins were seen about in the tideway close in-shore, and Mr. Coward suspected that some were breeding, but could not find where. On the other hand, they may have been fishing, and have belonged to the warrens on Ynys Gwylan not far away. Had they been breeding, some would most likely have been seen on the land at that date, or coming into or leaving the cliff. The other three species were probably stragglers. Mr. Coward also saw the Pied Wagtail (which I believed I saw), an old and young ones hardly strong enough to have flown from the mainland. But, on the other hand, he did not see eleven of the species that I saw. Four of these were probably stragglers, though it is possible the Common Sandpiper may breed. But the other seven I found fairly well established or represented, *viz.* Willow-Wren (a few), Spotted Flycatcher (several about farm gardens), House-Martin (several, but not breeding), Sand-Martin (a few), Goldfinch (a pair at least, and I believe more), Chaffinch (fairly common), and Cuckoo (several). And it is strange that they should have had such a poor hold on the locality. It is hardly possible that some of them at all events would be overlooked by so good an observer. We neither of us saw any Skylarks, Robins, Yellow Buntings, or Wrens, though I feel sure the last-named must be present. As Mr. Coward was there later in the season than I was (May 23rd to 24th) he found the Razorbill and Guillemot deeper in the business of breeding, and reports at least a score of pairs of the former, and at the same place (East-side) a long line of Guillemots on whitewashed ledges, fifty or sixty pairs at the lowest estimate, and he thinks more likely some hundreds. The Peregrines were still in possession. He secured a few Long-tailed Field Mice, a Common Shrew, and found the Palmated Newt.

I paid a very short visit to Lleyn in 1906 (May 29th to

June 4th), and, as usual at that time of the year, was much troubled with windy weather. Going out to St. Tudwal's Islands the evening I arrived, with the wind strong and gusty from the west, we found the sea so rough, especially under the larger island, that I really thought we should have been swamped, and we at one time thought we should not be able to get back that night; when we did, I had literally "not a dry rag on me." This is the worst of the Lleyn coast in May, when every day is precious to the bird-man. I suppose the examination of a clutch of six eggs (the only one I have heard of) of the Rock Pipit repaid me for a very unpleasant time. The nest was on a ledge of rock sheltered by grass and other plants. It was made of dead grass, and lined with finer grass and a little hair. The eggs were of the dark type. I may here mention that, shortly before, a clutch of (four) the beautiful pink variety of these eggs had been taken in Lleyn (17th), and sent to me. This variety is very rare. The wind was so bad when we were on the upper part of the island that we could not investigate very fully. A Herring-Gull's nest contained two very pale stone-coloured eggs with small well-defined spots. Peregrines had often been about the islands lately, and I saw one of the birds the next day on Penrhyn du. The Herring-Gulls on the cliffs about Pistyll Cim had nearly all got three eggs. The day after I arrived at Aberdaron, despite the surf which was plainly visible round the base of the islands, I tried to reach Ynys Gwylan fawr and fâch, but the swell was too much for us. We landed one youth, who was particularly active, on the big island. A few Razorbills were breeding about a low overhung shelf, almost a shallow cave, and very difficult to get at. Three-quarters of the way up is a huge nearly horizontal crack or fissure in the black rock forming the back of the cave; inside this the birds were breeding. The youth, after creeping up the face of the rock like an expanded spider, crawled into the crack and brought out two eggs, reporting others so far in he could not reach them. We got him on board with difficulty; and found it impossible to land anyone on the small island. Two days after the wind was off shore at last, and taking four men in case the wind got up (which it duly did), I visited both islands. As I climbed to the top of the bigger one I saw a pair of Carrion-Crows rise and fly out with the crowd of

Gulls—an odd contrast in colour. We found the nest on an overhung ledge of rock (near the south end, where the island is very rugged) so detached from the rest as to make the nest very difficult if not impossible to reach. With a stick, however, we took the two fresh eggs it contained. The nest was a very slight affair for a Crow, with no more than a bed of dead plants and some cow-hair (which must have come from the mainland) and wool. The eggs were small and curiously brown—quite abnormal in fact. I am inclined to think that this pair were very old birds, which had chosen this unusual place to nest in thinking they would be sure of getting an easy living among plenty of young Gulls and eggs. The date, too, was extraordinarily late for fresh eggs, and might have been postponed for the same reason. I saw a great many Herring-Gulls' nests with two or three eggs; all seemed fresh or only slightly incubated. An Oystercatcher's nest with one egg was merely a hollow in the black soil of a cornice of rock and turf. The cries of this bird can be heard a long way off. One evening when I was on the headland off which the islands lie, the Oystercatchers thereon were for some reason very excited and noisy; their cries sounded surprisingly loud, although they were three or four furlongs from where I stood. Two Puffin's eggs I tried were one-third sat upon in one case, and incubation begun in the other. There is a little grass on the outer island and much "spurrey" (*i. e.* seaside sandwort-spurrey or sea-sandwort, *Spergularia rubra marina*, or *Arenaria rubra marina*), of which, together with *Cochlearia*, *Armeria*, and grass, the Gulls' nests are chiefly built. There is a deep rift or chasm which nearly separates one part of this island from the rest; the bottom lies very cold and shaded and into this Seals are said to come. The Bardsey men have told me that in cold weather about Christmas, when they are crossing, they hear the Seals making a great noise round the islands, "crying like children." When we were going out in the morning, and standing out rather to the west of the islands, a Storm Petrel passed us flying towards the land. I was again assured that a man quarrying stone on the shores of the bay uncovered a small black bird sitting on one white egg.

I found a good many Puffins breeding all along the mainland, from the east side of Trwyn y Penrhyn as far as Ogof Lwyd, and one or two Razorbills looked as if they were nesting in the cliff near the latter—a deep narrow inlet—where some Herring-Gulls sat on their nests. A pair or two of these seem to breed on the bare stack near Ebot off the shore here, and I think Oystercatchers too, but I did not go out to it. No sea birds seem to breed on Maen Gwenonwy. There are sheep on it, and I think you can get there by a causeway at low tide. A pair of Great Black-backed Gulls this year had built a big thick nest of scurvy-grass, grass, sea-pink, and spurrey on bare jagged rock. It contained three eggs, one of which was pale blue with lilac markings. Corn-Crakes were as common as usual, and one night I could hear two calling at the same time. The Red-backed Shrike inhabited one former haunt at least.

Drayton, in the ninth song of his "Polyolbion," mocks gently at the rivers of Lleyn:—

> "Then further cause of speech the mighty Snowdon brake
> Least, if their wat'ry kind should suff'red be too long,
> The license that they took might do the mountains wrong.
> For quickly he had found that strait'ned Point of Land,
> Into the Irish Sea which puts its pow'rful hand,
> Puff'd with their wat'ry praise, grew insolently proud,
> And needs would have his Rills for Rivers be allow'd:
> Short Darent,* near'st unto the utmost point of all
> That th' Isle of Gelin † greets, and Bardsey in her fall;
> And next to her the Sawe,‡ the Gir,§ the Er,‖ the May,¶
> Must Rivers be at least, should all the World gainsay."

The Daron is a pleasant stream at all events, and thanks to mills, although I can step across it here and there, it makes a respectable trout stream, its trout remarkable, it seemed to me, for the large size of the red spots on their sides. Salmon, too, run up the little river in floods, and a 12 lb. fish has been taken. The two high bridges in Aberdaron, which generally look absurd, spanning duck-polluted shallows where the water would not run into your boots, will, after heavy rain, hardly take the flood water coming down. The Daron valley running down the length of the far end of Lleyn for some distance starts shallow

* Darent = Daron.
† Gelin = Gwylan.
‡ Sawe = Soch.
§ Gir = Penrhos.
‖ Er = Erch.
¶ May = Dwyfâch.

among the upland fields, where Peewits scream around you, and after burrowing down deeply through the high ground which overlooks the village, joins that of the Afon Mawr, and the united streams, rippling through the pebbles of the little beach, are lost in the surf-beaten sand. This little valley presents a great contrast to the wind-swept high ground on each side, and harbours birds which you might think you left behind when you penetrated the promontory by the high road which runs down its backbone. But its green meadows are often broken with bramble and other bushes, and its sides clothed with gorse and bramble and bracken and some shrubs. And near the fine old house and mill called "Bodwrdda" it is even wooded with low trees, chiefly ash, big enough to have Green Woodpeckers' holes in them, and for a Sparrow-Hawk to lay its eggs this year. One afternoon I noticed no fewer than four Chiffchaffs in song about the bushed sides of the valley. Linnets, Whitethroats, and Yellow Buntings of course breed anywhere about the cliffs when they are bushed; and indeed one ivied cliff a little way up the cwm of the Afon Saint, with some brambles at the foot, was inhabited by a Chiffchaff. But up the valley you find Mistletoe Thrushes (called here Caseg y Drychin = Mare of the bad weather), Song-Thrushes, not numerous in the rest of that neighbourhood, Spotted Flycatchers, Greenfinches, Sedge-Warblers, and Wood-Pigeons. There are Moorhens, too, and I put a bird off her seven eggs in the grassy bank at the edge of the stream. Nest, properly speaking, there was none, merely a hole in the ground very slightly lined.

A PRELIMINARY NOTE ON THE MANNER IN WHICH THE OYSTERCATCHER (*HÆMATOPUS OSTRALEGUS*) ATTACKS THE PURPLE-SHELL (*PURPURA LAPILLUS*).

By J. M. Dewar.

The Oystercatcher feeds upon the contents of the Purple-Shell to a limited extent it is true, yet sufficiently to justify its inclusion among the forces which control the numbers of this predatory mollusc. The opened shells which I have collected vary from three-quarters of an inch to one inch in extreme length from apex to base. The shells are detached from the rock with apparent ease. The Oystercatcher passes or forces its bill well under the shell, and by a quick lateral movement of the head tips the shell over so that the aperture looks upwards. In this position it is seized crosswise within the tips of the mandibles, and carried to a suitable place; it may be a little crack in which the shell is laid lengthwise, or a slight hollow in the rock, or very often a patch of firm sand. These advantages are optional, and room to work in seems to be the main object. Having set down the shell the Oystercatcher pushes its bill over the outer lip in a downward direction, introducing into the aperture the upper mandible alone. Through the point of the latter it administers a number of hammer-like blows, or, resting the point on the interior, a series of powerful thrusts, or pressing firmly and continuously it moves its head slowly from side to side, as if imparting a rolling motion to the shell in the direction of its long axis. If the bird is successful, a fragment is displaced from the under side of the shell. It is disc-shaped, and about a quarter of an inch in diameter. The edge may be straight, more usually it is bevelled inwards. The circular opening to which the disc corresponds is divided into two parts by the margin of the operculum, thus proving that the point of the upper mandible is pushed into the angular recess between the operculum and the inner wall. This marks the end of the first stage, and frequently it is never reached, many of the shells being strong enough to resist the efforts of the Oystercatcher.

The rolling motion to which allusion has been made can be demonstrated experimentally when the bill or other instrument is introduced into the aperture as near the apex of the shell as possible. The terminal portion rests in a vertical furrow, and when the upper end is oscillated in the direction of the long axis of the shell the latter rocks to and fro; as it rises on the apex the part directly under the bill, being unsupported, is driven out with moderate force in the typical form of a disc.

At the second stage the shell is turned over so that the normal aperture looks downwards or to one side. The Oystercatcher picks up and drops the shell to make it roll until it rests in the desired position. Usually one rolling is sufficient, but it may have to be repeated once or twice. From its form the shell can come to rest in one or other of two approximate positions—with the abnormal opening looking upwards, or with the aperture uppermost when the abnormal opening looks to one particular side. It cannot face the other side, because the shell will at once roll into its original position. When the abnormal opening looks upwards—perhaps the more common result—the Oystercatcher pushes its bill into the body whorl towards the ground and the apex of the shell, and then lowers its head in one swift, powerful movement. The outer lip appears to form the fulcrum of the lever. By its inclination away from the axis of the shell and by its sharp edge it resists the tendency of the shell to revolve. This resistance, however, must be increased by the line of leverage being as much as possible in the long axis of the shell. The methods applicable at the first stage may be used instead of that just described. When the abnormal opening looks to one side the Oystercatcher may employ that method, but a considerable part of the leverage will be wasted before the sharp edge of the outer lip bites the ground, and generally the methods of the first stage are adopted, the upper mandible alone passing through the abnormal opening, and travelling as much as possible towards the ground and the apex of the shell. Probably there is here an inclination towards the continuous pressure and rocking manœuvre. The result is strikingly uniform. A second piece of shell is driven out on the side of the first abnormal opening nearer the apex and further from the aperture. Nearly twice the diameter of the first disc, it is a semilune, the circumference of the circle of which it forms part intersecting that of the first opening. The edge is either straight or bevelled inwards. This second and larger portion is found rarely in one piece. The greater part of the contents is now accessible. The mollusc is removed piecemeal, each part being seized and shaken from the shell in three or four mouthfuls. Just as the Oystercatcher may fail at the first stage, so it may be unequal to the second. In this event it removes through the first opening as much of the soft parts as are within reach.

On sand the shell sinks under the force applied to it with an inclination towards that side on which the force is greater, and one can learn indirectly by which method the force was applied. During the second stage a column of sand rises through the aperture to the first opening, and, adhering to the flesh, obscures much of it, or renders it distasteful. On the other hand, one may suppose that the yielding sand diminishes the shock which the bill has to sustain.

So far I have sketched what appears to be the general mode of attack, and what is certainly its common result when the attack is successful. The ideal result seems to be the extrusion of a piece of shell, equal in area to that of the two discs, at the first stage, so that the Oystercatcher can clear out the contents of the shell with the minimum of trouble. The extruded portion may be in one piece, or broken up into two or more fragments. The gap formed in the shell is irregularly pear-shaped or elliptical in outline, and does not show the symmetrical dentation characteristic of the type. Sometimes the Oystercatcher, falling short of its ideal as it were, is content to make the first small opening, and, without reversing the position of the shell, to remove a portion of the soft parts by poking its bill in from below.

As to the frequency with which the Oystercatcher attacks the Purple-Shell, my own experience indicates that the act occurs locally and very irregularly. Days pass, and no opened shell is seen on the feeding-grounds; on single days I have gathered eight or nine. A habit may be developed on parts of the extended coast-line of this and other countries, but there are reasons why it should not be. I happened to witness an Oystercatcher attack seven shells in succession. It failed to gain access to four of them. One, after being submitted to a second bout of hammering, was picked up, shaken violently, even passionately, and then thrown away. To have four failures out of seven attempts is bad, and, though it is not truly representative, yet the average must be high, much higher than with Mussels, Limpets, &c. With these, if one may put it so, the Oystercatcher has a reasonable prospect of success, provided that it attends to what are presumably the conditions of success, and it can satisfy its wants with great rapidity. On the other hand, the Oystercatcher has no security whatever that it can open a Purple-Shell, and the process is apt to be infinitely tedious. The seven shells in the example I have given were dealt with in the space of about twenty minutes. In the same time an Oystercatcher can account for seven times seven Mussels with a fraction of the labour expended.

It may be noteworthy that the Oystercatcher appears invariably to carry the shell crosswise in the bill from the place where it was found to the place where it is to be opened, and yet holds it by the outer lip in making any subsequent movements. The relation of the bill to the aperture and the margin of the first opening during the application of force to the shell is also a little obscure. It is clear—in theory, at least—that if the shell be held firmly the under side will be crushed and impaled in the soft parts which are generally refused in that condition by the Oystercatcher. The evidence, however, both direct and indirect, points the other way. When it is hammered the shell does not rise with the bill between two successive blows, and it appears to have a slight mobility independent of the movements of the bill. The fragments are driven out and not inwards, which, in consideration of the mechanical construction of the shell, is by far the better plan. On the assumption that, to produce the desired result, the shell must be held loosely, it would seem simpler and more effective to put the point of the whole bill inside the shell, but I have not been able to assure myself that the Oystercatcher ever does so. At present, I suppose that the lower mandible is kept outside the shell for the express purpose of preventing or arresting any tendency to lateral movement. As long as the shell is rocked in the direction of its length it is perfectly steady, but its behaviour is uncertain whenever the movement takes the line of its shorter axis.

NOTES ON THE MAMMALS OF ISLAY.

By Harold Russell.

So little is known about the exact distribution of mammals in the Inner Hebrides that a few notes and observations on the fauna of Islay may be worth recording. Having visited the island on numerous occasions in the last twelve years, I attempted, in August and September, 1909, to trap and identify some of the smaller mammals. A reward offered for any Mice (other than House-Mice) brought to me by school children proved fairly successful. Foxes, Badgers, and Wild Cats are unknown in Islay. I have found no trace of the existence of Hedgehogs, Weasels, or Squirrels. Of all our small mammals, Moles are most easily detected if present, and I am satisfied that there are none in Islay.

Bats are fairly common, but I did not obtain any specimens, and all that I saw on the wing appeared to belong to the common small species, *Vesperugo pipistrellus* (Schreb.).

Common Shrew (*Sorex araneus*).—I obtained three Shrews, which I suspected belonged to this species, and Mr. Oldfield Thomas, of the Natural History Museum, South Kensington, was good enough to examine and name them for me. The measurements of the first one, freshly killed, were as follows:— Head and body = 74 mm.; tail = 38 mm.; hind foot = 13 mm. This, so far as I know, is the first time that *S. araneus* has been identified from Islay. Messrs. J. A. Harvie-Brown and T. E. Buckley ('Vertebrate Fauna of Argyll and the Inner Hebrides,' 1892, p. 8) state that the Lesser Shrew (*S. minutus*) is the species "which alone inhabits the Isles." This is certainly incorrect. I did not obtain any Lesser Shrews, but have no reason to believe that the two species do not exist together.

Stoats (*Mustela erminea*) appear to be fairly common, in spite of much trapping by keepers. They undergo great variety of seasonal variation. A collection of pure white skins made by the keepers of Islay House has been made into a handsome garment of ermine.

Otters (*Lutra vulgaris*) are common, especially round the coast. The keepers believe that they travel between Islay and Jura, and seldom stay long in one place. There is a pure white skin preserved at Islay House. It was got from an animal killed a short time ago, and another white Otter was reported on the Sorn last summer. It is said that there is a third preserved at Kildalton House, which looks as though albinism was not uncommon.

Common Seals (*Phoca vitulina*) are plentiful.

Grey Seal (*Halichœrus gryphus*).—I am told that a few pairs of this large and rare Seal still breed on a spot that need not be exactly specified. A short time ago a man named Macphee went there in a boat, and carried off two young ones, intending to rear and tame them. The enraged mother pursued the boat, and put her flippers over the gunwale, which so terrified Macphee that he let the little ones go. That these were young Grey Seals is borne out by the fact that this took place in October, when that species produces its offspring. *Phoca vitulina* breeds in May or June.

Red-Deer (*Cervus elaphus*).—There are two distinct herds of Deer on the island. The first inhabits the large woods round Islay House. The numbers are rigorously kept down by periodic Deer-drives. The herd seldom falls below ten, and has, I am told, sometimes reached thirty. The second herd is much larger, and inhabits the wilder and higher ground on the north-west side of the island. It probably numbers several hundred. Mr. Martin, of Dunlossit, told me that in 1908 twenty-six stags and nine hinds were killed on his ground. The Islay herds are frequently recruited by fresh blood from Jura, where there is a well-known forest. The stags constantly swim across the Sound.

Fallow-Deer (*C. dama*) were introduced about a century ago by the Campbells of Islay. The herd at one time is said to have numbered over five hundred. Now there are less than one hundred, and the numbers are slowly decreasing. The Fallow-Deer rarely if ever leave the Kildalton Woods.

Roe-Deer (*Capreolus caprœa*) are apparently indigenous, but not numerous. So far as I can discover there are none in the woods round Islay House, and not many in the woods round Kildalton and Dunlossit. The increase of dogs, who destroy the helpless fawns, is said to account for some of the decrease, but inbreeding may also have something to do with it. So far as I know no Roe-Deer have been introduced.

LONG-TAILED FIELD-MOUSE (*Aprodemus sylvaticus*). — This species appears to be fairly plentiful. I trapped several in ordinary mouse-traps in the woods, and saw numbers of holes.

HOUSE-MOUSE (*Mus musculus*) is plentiful, and so are RATS (*M. decumanus*), wherever there are human habitations.

WATER-VOLE (*Arvicola amphibia*). — Messrs. Harvie-Brown and Buckley mention this species as possibly existing in Islay, but, as they suggest, the observer quoted was almost certainly mistaken. I have looked carefully, when fishing, for any traces without discovering them. At one spot on the Sorn I found a colony of brown land Rats who frequented the water's edge and had made holes.

FIELD-VOLE (*Microtus agrestis*).—A nest of three young Voles was discovered in a rick and brought to me. The old ones escaped. Mr. Oldfield Thomas named the young for me. The nest I sent to Mr. Charles Rothschild, hoping that some rare fleas might be bred from it, but I believe that nothing was obtained. I saw no holes that gave the impression of belonging to these Voles, and do not think they are common.

COMMON HARES (*Lepus europæus*) are not abundant. It is said that they were originally introduced. This is the only Hare in Islay.

RABBITS (*L. cuniculus*) are exceedingly abundant both in the woods and on the sand-hills round the coast. Enormous numbers are killed annually. Black varieties are common.

NOTES AND QUERIES.

MAMMALIA.

"Hardistrow," a Name for the Shrew.—I have recently noticed an attempt to connect the name "Hardistrow" (a name given to the Shrew) with "Harvest," through the name "Harvest-trow" given by Jefferies. It may therefore be well to point out that there is no connection between the two words. The form of this old name for the Shrew in local use in Oxfordshire is "Hardy-Shrew," or more commonly "Hardy-Mouse." It is a corruption of "Erdshrew" or "Erdmouse," and would of course be written "Ardymouse," if it were not for the English habit of putting in the letter "H" wherever possible. "Erd" is derived by Professor Bell from the Anglo-Saxon *Eorth*=Earth; but we may get nearer the sound of our local name by comparing the Dutch word for earth, *aarde*. Hardyshrew or Hardymouse means simply Earthshrew or Earthmouse, and is a very appropriate name.—O. V. APLIN.

AVES.

Irregular Appearance of Blackbird.—It may be interesting to place on record the fourth annual visit of the White-headed Blackbird (*Turdus merula*) mentioned in 'The Zoologist' for 1908 (p. 312). In July last I began to look out for him, but he did not arrive till August 2nd. He remained as usual for a few days, and then disappeared till the middle of September; from that date he remained, and could be seen daily till early in November. At the time of his final departure he was really a remarkable-looking bird, his head and shoulders being snow-white, and the rest of his body jet-black. I can only hope that he will be as secure in his other places of resort as he is here.—R. H. RAMSBOTHAM (Elmhurst, Garstang).

Black-tailed Godwits in Cork Harbour.—Early last month (February) a flock of eleven Black-tailed Godwits revisited the mud-banks near Blackrock (the feeding-ground where they were seen by Mr. W. B. Barrington last October), and at my request a specimen was shot some days afterwards near Rochestown, about February 15th. This flock was evidently the same (the numbers being similar as those of the flock seen in October), but had probably between dates changed their haunts to some other part of the wide expanse of mud-banks of that part of the Lee Estuary. It is, I believe, unusual for this species to remain for any time where they may rest when on migration. However, I think it may be assumed that this flock remained about the harbour all through the winter. This species visits the east and south coasts of Ireland much oftener than the west, where it is a very rare visitor, and has come under my notice only on five occasions during a period of forty years' wildfowl shooting in the Moy Estuary, Killala Bay. In May, 1863, I was shown a beautiful specimen in summer plumage, shot on the tidal part of the Moy between Castleconnor and Ballina. On Nov. 6th, 1876, I secured a bird in immature plumage by a shot from my punt-gun, by the same shot obtaining one Bar-tailed Godwit, thirteen Lapwings, and thirteen Redshanks. On June 29th, 1878, I observed a pair in the beautiful summer plumage among a flock of Bar-tailed Godwits on the sands near Bartragh, none of the latter showing any red. On Sept. 3rd, 1881, I was shown an immature bird, shot by a young friend on the sands near Roserk Abbey. This is all the experience that I have had of this species during my forty years' punt-shooting, and shows what a rare visitor it is to our west coast, where the Bar-tailed is so numerous, and many of them remaining all through the summer, none leaving the estuary sands for their arctic breeding-grounds.—ROBERT WARREN (Ardnaree, Monkstown, Co. Cork).

Incubation and Fledging Periods in Birds. — As records of the periods of development of nestlings are even less frequent than records of incubation—although surely not of less interest—it may perhaps be worth while to set down what scanty notes I have been able to make on the subject during the last few seasons. Incubation periods are included for the sake of completion, though these are no doubt fairly well known, in the commoner species at all events:—

	Period of Incubation.	Fledging Period.
Mistle-Thrush	13–14 days	13–14 days
Song-Thrush	13–14 ,,	13–14 ,,
Blackbird	13–14 ,,	13–14 ,,
Whitethroat	11–12 ,,	11 ,,
Willow-Wren	12–13 ,,	13–14 ,,
Sedge-Warbler	13–14 ,,	13–14 ,,
Hedge-Sparrow	12–13 ,,	12–13 ,,
Dipper	15–17 ,,	?
Pied Wagtail	13–14 ,,	13 ,,
Spotted Flycatcher	13–14 ,,	13 ,,
Swallow	15–16 ,,	21–22 ,,
Greenfinch	13–14 ,,	13 ,,
Yellow Bunting	13–14 ,,	13 ,,

	Period of Incubation.	Fledging Period.
Starling	12–13 days	21–22 days
Magpie	17–18 "	29–30 "
Carrion-Crow	18–19 "	33–34 "
Rook	17–18 "	29–30 "
Long-eared Owl	28–30 "	? "
Sparrow-Hawk	30–32 "	28–30 "
Moorhen	19–20 "	——

As individual birds vary to some degree in commencement and constancy of incubation, there is some slight difference in incubation periods to be observed at times. For instance, two Song-Thrushes, nesting close together in a shrubbery, commenced laying on the same day, laid the same number of eggs, and yet one bird hatched its brood at least twelve hours in advance of the other. Amongst Passerines laying is very regular as a rule, one egg being deposited each day until the clutch is complete. There are individual exceptions, however. For example, I have known an instance of a Grey Wagtail which laid two eggs of its clutch in regular course, missed the third day, and laid again on the fourth and fifth. Hawks and Owls are well known to lay only every second or third day. A Partridge, whose nest was kept under daily observation from the time it contained two eggs, took eighteen or nineteen days to complete its clutch of sixteen eggs. It is an interesting fact that some species of birds lay earlier in the day than others. Mistle- and Song-Thrushes, for instance, do not lay as a rule earlier than 8 or 9 a.m., according to my observations, and I have known a Mistle-Thrush delay until almost noon. Rooks also are late layers. Hedge-Sparrows, on the other hand, seem to lay either during the night or at daybreak. Swallows and Starlings are notable exceptions to the average small bird in the period required by their young to fledge. It is possible that young Starlings, if reared in an open nest, might fly at as early an age as young Blackbirds or Thrushes, but young Swallows have no impediment to prevent an early flight.—S. E. Brock (Kirkliston, West Lothian).

EDITORIAL GLEANINGS.

Last autumn we received a circular on 'Swine Husbandry and Bacon Production,' by Mr. Loudon M. Douglas, Lecturer on the Meat Industry, Edinbugh, and for want of space have been unable to refer to it before in these pages. The following extracts are both economically important and zoologically interesting:—

"From day to day the evidence continues to accumulate showing that the bacon markets of the world are hopelessly disorganized, and that in so far as swine husbandry is concerned we are passing through a critical time. It is, in fact, a curious state of affairs, and calls for special comment not only from all who are interested in the prosperity of agriculture, but from those also who are specially concerned with securing steady markets in the provision trade. Apparently the shortage began about the beginning of the present year (1909), and has been more especially marked in the United Kingdom, but it exists also in the United States, Canada, and Denmark, these being the principal bacon-curing countries of the world. In the United States the outlook is indeed a serious one, not only for that country itself, but for the export trade. Actual records show, for example, that the number of hogs packed on what is known as the Western Markets, and which include Chicago, Kansas, South Omaha, St. Louis, Cincinnati, and other towns to the number of sixteen, as also smaller towns in the same territories, exhibit a very considerable shortage as compared with last year (1908). From March 1st to September 1st in each year the figures were as follows:—

Number of pigs packed on Western Markets, U.S.A.

1908	12,975,000
1909	11,735,000
Shortage	1,240,000

"Naturally, under such circumstances, we turn to our home conditions in order to see if anything is being done to avert the coming famine, and at the very outset are met with the figures from the preliminary statement just issued (1909) by the Board of Agriculture, in which the numbers of live stock in the United Kingdom are given. We find that there is a lamentable shortage of pigs as compared with last year (1908). The figures are as follows:—

Agricultural Returns up to June 4th in each Year.

	1909.	1908.
Sows kept for breeding purposes ...	316,552	369,476
Other pigs	2,064,335	2,454,006
Totals	2,380,887	2,823,482

"These show a decrease of 52,924, or 14·32 of breeding sows as compared the one year with the other, and a total decrease in the pig supply of Great Britain of 442,595, or 15·7 per cent. In so far as Ireland is concerned a very considerable shortage is also to be recorded here, and unfortunately one of the items is a smaller number of breeding sows of about 20,000.

"It will thus be seen that we have reached a perilous condition in so far as swine husbandry and bacon curing is concerned. The demand for pig products goes on increasing from year to year, and it seems difficult to understand why farmers do not endeavour to cultivate pigs to a greater extent. Year in and out they yield a larger profit than any other live stock, inasmuch as they can be fed on food which would otherwise be wasted. It is true that at the moment feeding meal is dear, but even at the present price of 9s. per cwt. there is a handsome profit in pig feeding. In ordinary times there is a good profit with pigs fetching 42s. per cwt. dead weight. Such a figure pays the farmer and pays the bacon curer. At the moment, however, the dead weight of pigs is about sixpence per pound, and in some markets rather more."

"A MILLION birds have been slaughtered each year for several years past in the Hawaiian Islands' bird reservation by Japanese, according to Captain F. D. Walker, of the Government cutter 'Thetis,' which effected a recent capture of Japanese on Midway Island. That island, and all others in the group with the exception of Laysan, are said to have lost practically all their once teeming bird population. There is no evidence of any marketing of birds' skins and feathers in Honolulu, says a despatch to the Toronto 'Globe,' the poacher's spoils, it is said, being sold by Osaka merchants in London, Paris, and New York. The bird poaching, it is believed, is handled direct from Japan. Japanese schooners, ostensibly in the shark-fishing business, are frequent callers in the bird island group, which stretches north-west from Hawaii. Capt. Walker says the birds were so tame on all the islands that they could be caught by hand. The poachers, he states, captured them, cut off their wings, and left the helpless creatures to die a slow death."—*Pall Mall Gazette*, Feb. 18th, 1910.

BRITISH
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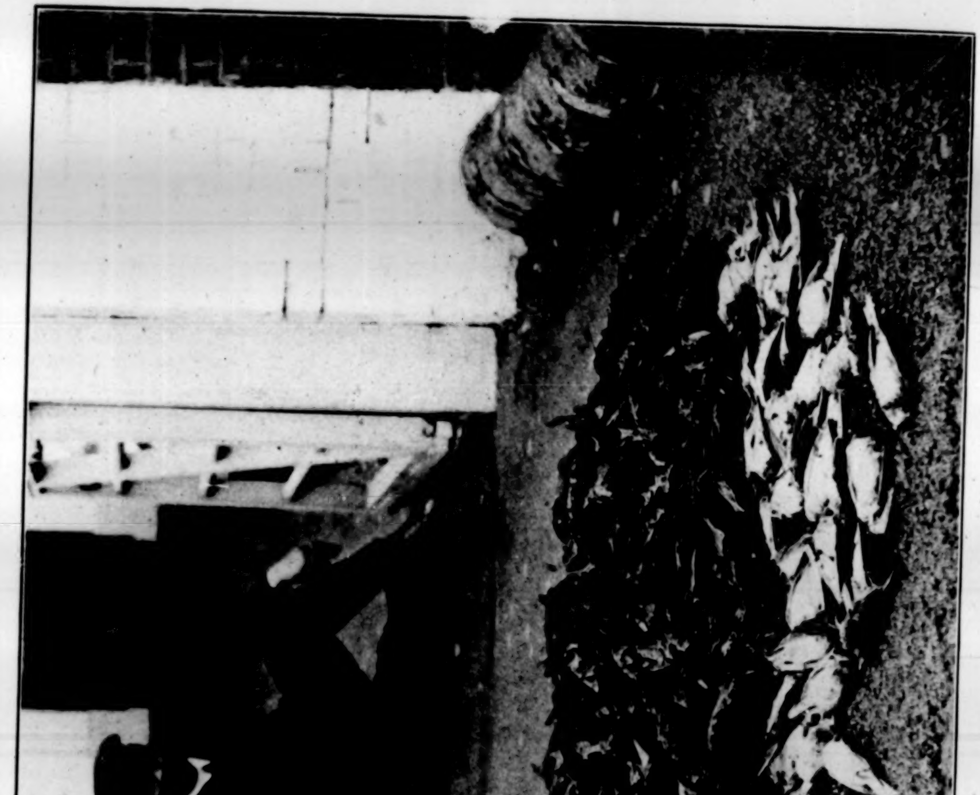
MUSEUM

Plate I.



Sky-Larks and Starlings at Cromer Lighthouse.